EPA's Approach to Risk Management

Jennifer McLain, Ph.D.
Office of Ground Water & Drinking Water
USEPA
TCR-DS Workshop
January 30, 2007

Identifying Contaminants for Regulation

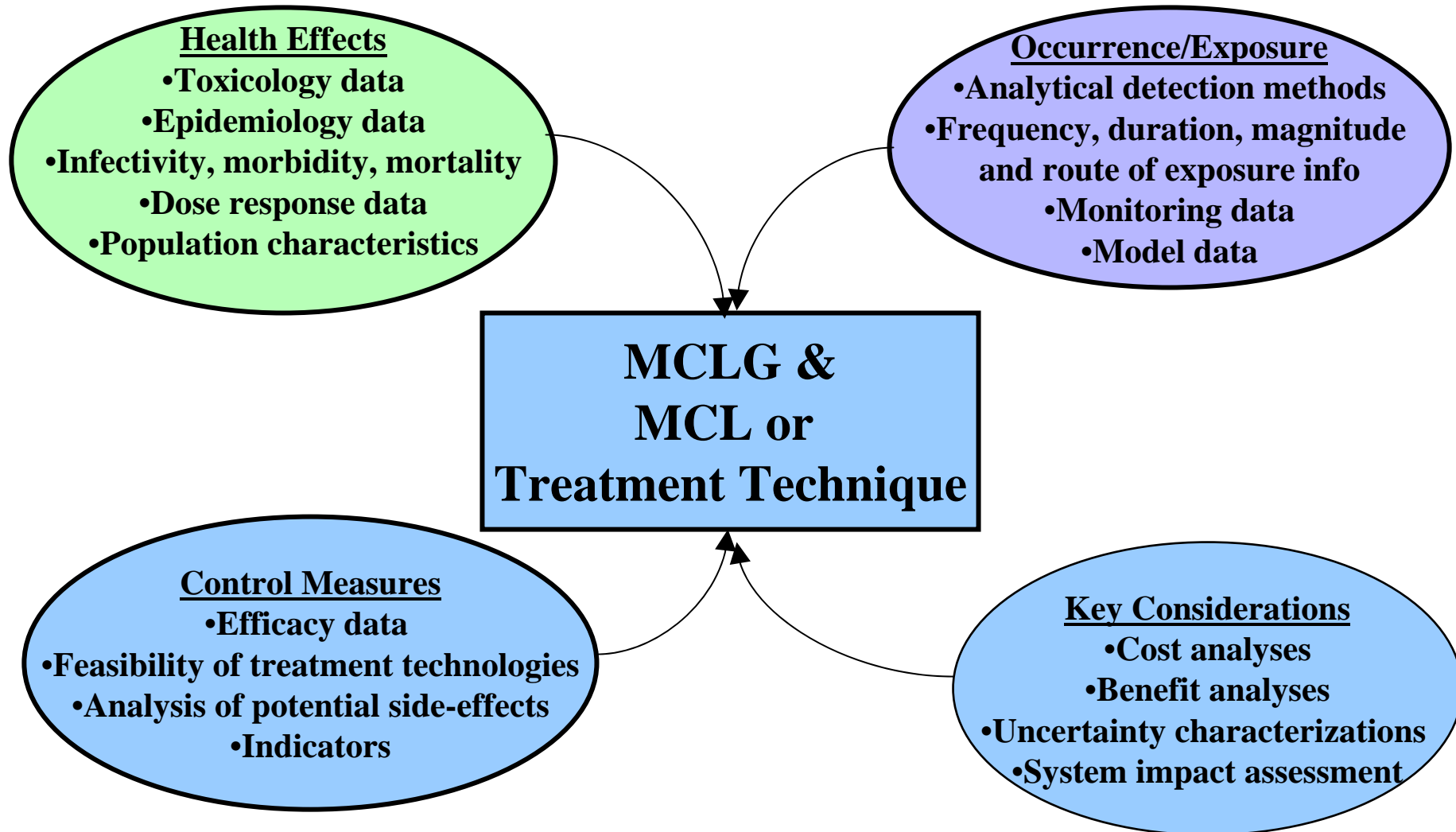SDWA <u>requires</u> regulation of contaminants that:

- May have an adverse health effect
  - must consider sensitive sub-populations of infants, children, pregnant women, elderly, individuals with history of serious illness

- Occur or are likely to occur in PWSs (considering frequency and level)

- Present a meaningful opportunity for health risk reduction
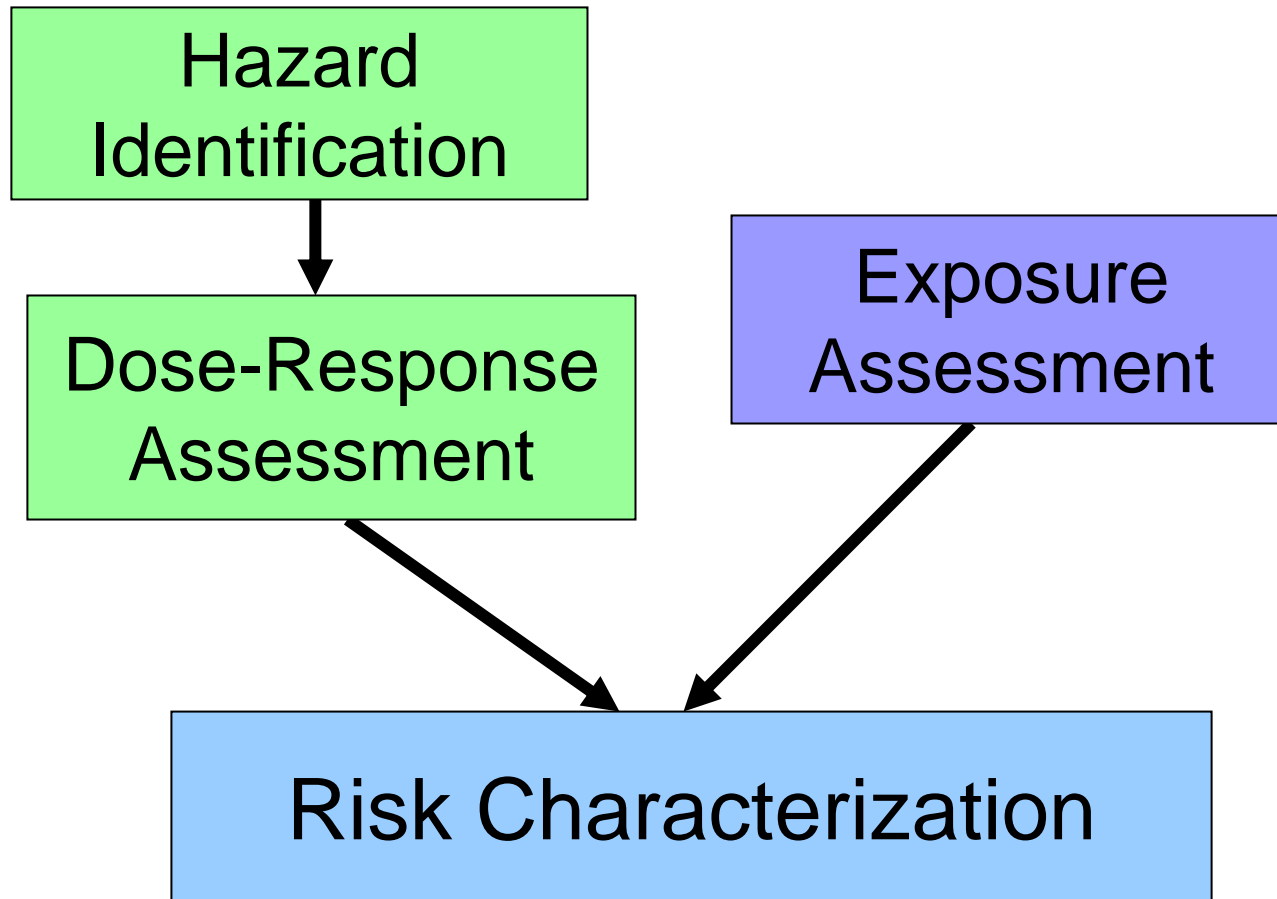 - based on best available science and data

Safe Drinking Water Act Requirements

- EPA must publish Maximum Contaminant Level Goals (MCLGs)
  - **Must set levels at which no health effects occur and which allows for adequate margin of safety**
- EPA must promulgate MCLs or treatment technique requirement as close to the MCLG as is "feasible" (taking costs into consideration)
- States must adopt regulations at least as stringent as EPA's
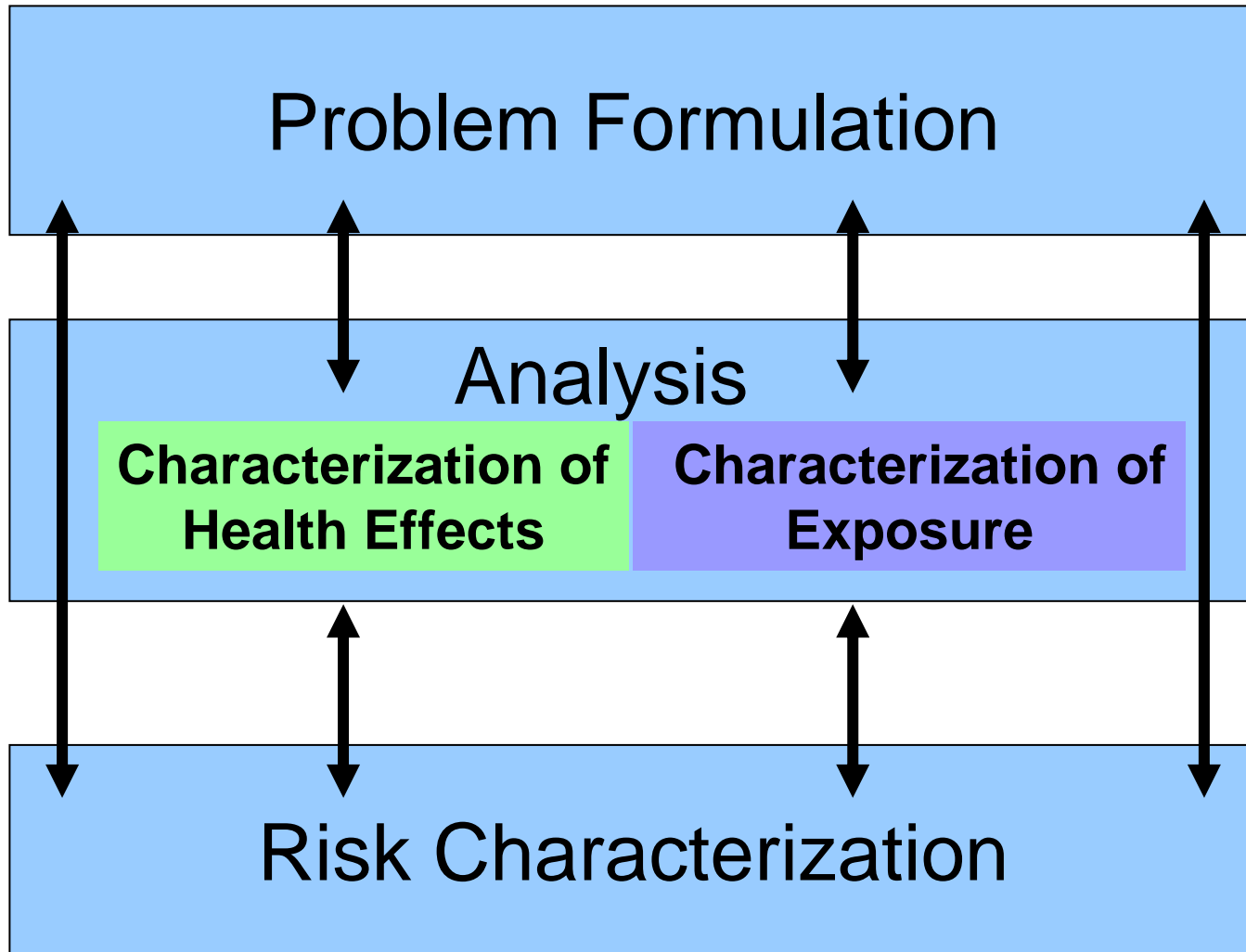 - public water systems must meet state standards
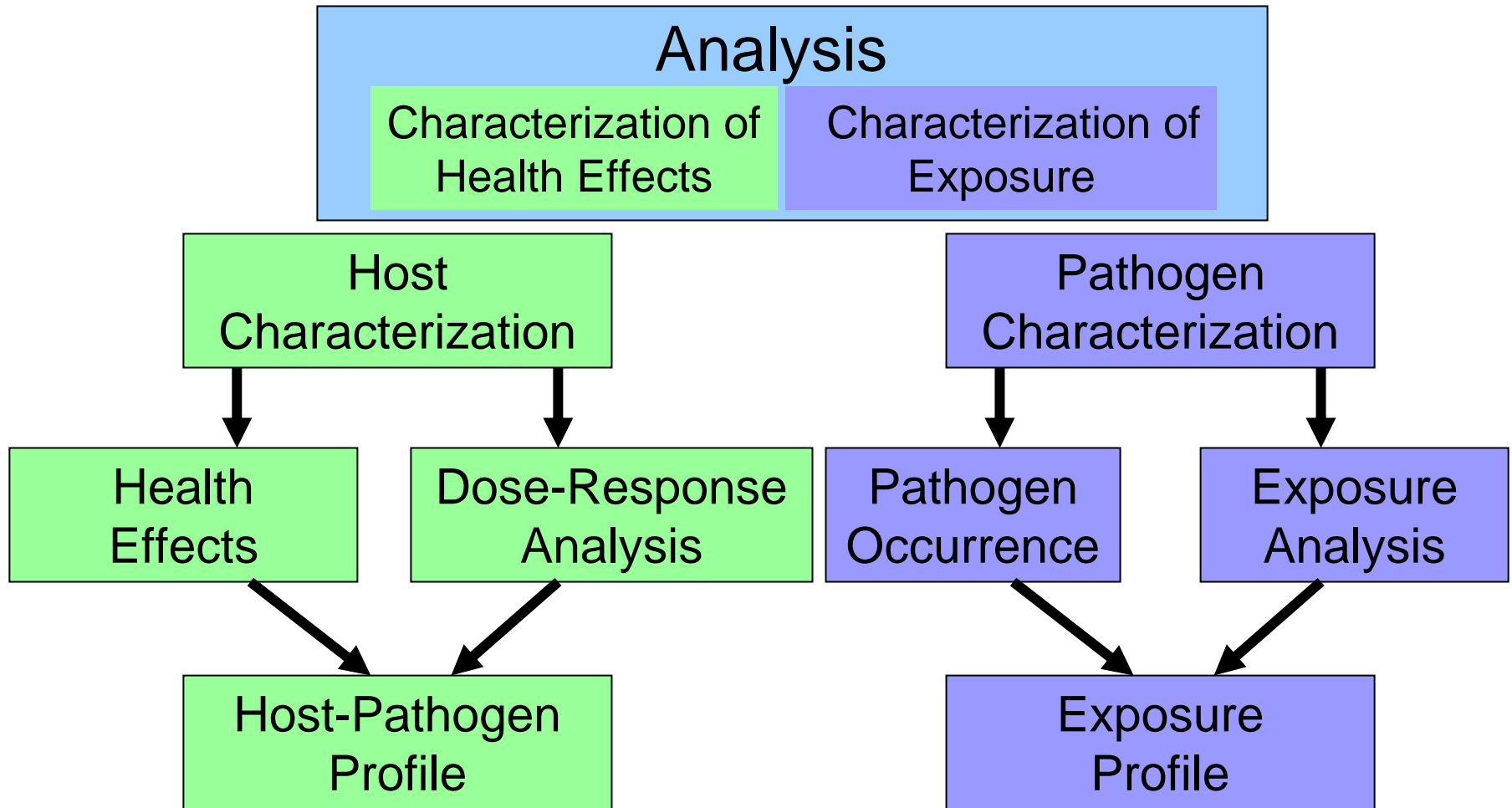
Research Inputs into DW Regulations

Health Effects
- Toxicology data
- Epidemiology data
- Infectivity, morbidity, mortality
- Dose response data
- Population characteristics

Occurrence/Exposure
- Analytical detection methods
- Frequency, duration, magnitude and route of exposure info
- Monitoring data
- Model data

MCLG & MCL or Treatment Technique

Control Measures
- Efficacy data
- Feasibility of treatment technologies
- Analysis of potential side-effects
- Indicators

Key Considerations
- Cost analyses
- Benefit analyses
- Uncertainty characterizations
- System impact assessment

Chemical Risk Framework

Adapted from NAS, 1986
Courtesy Fred Hauchman

Microbial Risk Framework

Problem Formulation

Analysis

Characterization of Health Effects

Characterization of Exposure

Risk Characterization

Adapted from ILSI, 2000
Courtesy Fred Hauchman

Microbial Risk: Exposure & Health Effects

Adapted from ILSI, 2000
Courtesy Fred Hauchman

Risk Decision Framework

Courtesy Fred Hauchman